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EXAMINER	
JACKSON, MONIQUE R	
ART UNIT	PAPER NUMBER
1773	19

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/235,686	LIU ET AL.	
	Examiner	Art Unit	
	Monique R Jackson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11,12,16,20-22,26-29,33-35 and 39-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11,12,16,20-22,26-29,33-35 and 39-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Upon reconsideration, the finality of prior office action dated 7/30/01 has been withdrawn. Prosecution is hereby reopened. Any inconvenience to the Applicant is regretted.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. Claims 39 and 2-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 39 recites the limitation "method of claim 1, wherein the low profile additive" in line 1 however Claim 1 recites "impregnating with a first thermosetting resin composition comprising a first uncured thermosetting resin and **a low profile additive**, (b) drying the impregnated substrate of (a), (c) impregnating the substrate of (b) with a second thermosetting resin composition comprising a second uncured thermosetting resin and **a low profile additive**" in lines 3-7, hence it is unclear whether "the low profile additive" of Claim 39 refers to "a low profile additive" in the first thermosetting resin, "a low profile additive" in the second thermosetting resin, or both low profile additives.

4. Claims 8, 26, 45, 52 and 59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The above claims recite the limitation "at least about 2.5 Newtons" however the term "at least" indicates an endpoint that the value must meet or be greater than while the term "about 2.5" indicates a range around the value 2.5 and hence does not represent an endpoint. Therefore, it is unclear what range is meant to be encompassed by this

term given that the specification provides no guidance with regards to the term "at least about" and given that 2.4 is **at least** 2.3 which is **about** 2.5 and hence 2.4 is **at least about** 2.5 but actually less than 2.5.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 9, 20-22, 27-29, 33-35, 40-44 and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Magnin et al (USPN 6,290,815.) Magnin et al teach a high abrasion resistant paper sheet containing grit particles suitable for use in producing decorative laminates such as a protective covering or overlay sheet which is placed on the decorative sheet of a laminate, wherein the sheet can be produced by impregnating a paper sheet with a mixture of a thermosetting resin, such as melamine resins or urea resins, and grit particles wherein the grit particles may be alumina, silica, glass and ceramic particles in spherical, approximately spherical, polyhedral or fiber shape having a particle size of between 10 and 200μm (*as in instant claims 9, 20-22 40-44 and 47*; Abstract; Col. 1, lines 4-58; Col. 5, lines 12-24; Col. 5, line 54-Col. 6, line 13; Col. 6, lines 38-46; Col. 7, lines 1-25; Claims 1, 7-8 and 27.) Magnin et al further teach that the abrasion resistant sheet can be used in either a high-pressure laminate process to consolidate the sheet with a plurality of other resin impregnated kraft sheets which

may then be adhesively bonded to a base support such as a particleboard support, or a low-pressure laminate process where the protective sheet and a decorative sheet impregnated with resin are laminated to a support board such as a particle board, wherein Magnin et al further teach that consolidation conditions for a high pressure process are 110-170°C and a pressure of about 5.5-11MPa while a low-pressure process is conducted at a temperature of 160 to 175°C and a pressure of 1.25 to 1.6MPa (*as in instant claims 27-29 and 33-35*; Col. 1, lines 27-64; Col. 7, lines 10-25.) Though Magnin et al does not specifically teach two separate impregnation steps with an intermediate drying step, the Examiner takes the position that the product produced by Magnin et al in a single impregnating step followed by a single drying/curing step is the same product as the instant application with two subsequent impregnation steps and an intermediate drying step given that product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process." In re Thorpe, 227 USPQ 964,966 (Fed. Cir. 1985.) Therefore, with regards to instant Claim 9, the Examiner takes the position that the product taught by Magnin et al anticipates the instantly claimed synthetic resin film.

7. Claims 9, 20, 21, 22, and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerber (USPN 5,096,983.) Gerber teaches a thermosetting phenolic resin composition comprises a phenolic resole resin such as a phenol formaldehyde resin and can include fillers or

aggregates conventionally used with phenolic resole resins such as microspheres of glass, phenolic resin or ceramic in quantities up to about 20% of the formulated resin product wherein the thermosetting phenolic resin composition is particularly useful for producing impregnated paper for use as auto oil and air filters (Abstract; Col. 9, lines 59-68; Col. 14, lines 25-27 and 51-61.) With regards to instant Claims 9 and 47, though Gerber does not specifically teach the method of producing the impregnated paper as instantly claimed, the Examiner takes the position that the impregnated paper taught by Gerber is the same product as in instant claims 9 and 47 and hence anticipates these claims given that product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps.

8. Claims 9, 20, 40, 42 and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Portelli et al (USPN 5,276,106.) Portelli et al teach a thermosettable resin comprising thermoplastic polymer particles and prepregs prepared from the thermosettable resin composition (Abstract.) Portelli et al teach that the thermosettable composition comprises 2 to 50, preferably 2 to 30, parts per 100 parts of thermosettable mixture of resin particles which may be formed by spray drying of solutions of or coagulation of amorphous thermoplastic resin (*inherently resulting in "substantially spherical particles"*) and have an average particle size of 0.5 to 50 micrometers (Col. 2, lines 52-55; Col. 9, lines 9-19.) The thermosettable resin can also contain additives to modify characteristics of the cured composition such as solid microspheres of glass, ceramic and metal (Col. 10, lines 22-31.) Portelli et al further teach that the thermosettable resins are suitable as impregnating resins and can be used to impregnate a web of fibrous material such as woven and non-woven webs or the like and provide improved properties upon curing (Col. 2, lines 62-65; Col. 9, lines 67-68; Col. 10, lines 5-13; Examples.) With regards to

Claim 9, though Portelli el do not specifically teach the method of producing the impregnated web as instantly claimed, the Examiner takes the position that the impregnated web taught by Portelli et al is the same product as in instant claim 9 and hence anticipates the product claim given that product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps.

Claim Rejections - 35 USC § 103

9. Claims 1-9, 11-12, 16, 20-22, 26-29, 33-35, and 39-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al (USPN 5,456,949) in view of Takahashi et al (USPN 5,928,778) and in further view of the admitted prior art for the reasons recited in the prior office action and restated below.

10. Albrinck et al teach a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance, as well as excellent appearance and cleanability and methods of producing same (Abstract.) The method of producing the decorative laminate includes impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles having a particle size of about 15 microns to about 45 microns suspended in the coating formulation wherein this initial coating step provides about 50 to 80 percent of the total resin requirement of the decorative laminate (Abstract; Col. 5, line 63 - Col. 6, line 5; Col. 6, lines 10-13.) The abrasion resistant material is preferably alumina with the concentration of alumina particles in the resin coating formulation dependent upon the amount of surface area which needs to be covered, however for sufficient damage resistance, the concentration should be about 8-12 grams per square meter of surface area (Col. 5, lines 3-8.) The alumina particles should be precoated with

an amino silane coupling agent (Col. 5, lines 8-10.) The resin impregnated decorative sheet is then further coated or **saturated** (*impregnated*) with an overcoat of a "neat" melamine formaldehyde resin coating formulation which does not contain any abrasion resistant alumina particles or in the alternative contains abrasion resistant particles that are smaller than the particles used in the first coat (Abstract; Col. 6, lines 14-20.) Albrinck et al further teach that the coating formulation further comprises about 0.1 percent polyethylene glycol distearate (*a thermoplastic waxy material*) as the preferred lubricating agent to enhance surface slip and improve scrape resistance of the laminate and the overcoat composition further comprises about 0.1 to about 0.2 percent polyethylene glycol distearate as a surface lubricant to further reduce the abrasive friction on the surface of the decorative laminate (Col. 5, lines 25-54; Col. 6, lines 25-27.) Albrinck et al also teach that a polyethylene wax in the coating formulation was evaluated as an auxiliary slip agent, however, it was found to impart haze and blur to the resulting decorative laminate (Col. 5, lines 39-43.) Albrinck et al teach that the damage resistant decorative laminate may be produced either with or without an intermediate drying step between the initial coating and the subsequent overcoat (Col. 6, lines 28-32.) The coated decorative paper and at least one backing sheet is dried and then heat and pressure consolidated using conventional laminating techniques into a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance as well as a uniform appearance and excellent cleanability (Col. 6, lines 33-38.) Albrinck et al further teach that conventional high pressure decorative laminates are made of two essential layers, a core layer and a surface layer, wherein the core layer normally consists of a plurality of cellulosic sheets generally made from a kraft paper impregnated with a laminating resin (Col. 1, lines 19-25.) Placed above the

core layer is the decorative layer which is generally an alpha-cellulose paper impregnated with a melamine-formaldehyde resin (Col. 1, lines 31-35.) The laminates are used as surfacings for counter tops, table tops, furniture, store fixtures and the like (Col. 1, lines 65-66.)

11. Albrinck et al do not specifically teach the temperature and pressure at which consolidation is performed however, as admitted by the Applicant as prior art, it is well known in the art that high pressure laminates are produced at a temperature of 230-340°F and a pressure of 800-1600 psi (Page 3, lines 1-10.) Additionally, it is well known in the art that these laminate films are typically used as surface material for materials comprising wood, for non-limiting example, particle board, medium density fiberboard, composite panel and other wood-based materials (Page 2, lines 8-11.) Albrinck et al also do not specifically teach that the abrasion resistant particles or the polyethylene glycol distearate are microspheres or substantially spherical particles, are present in an amount of about 0.5 to 4.75% of the thermosetting resin after drying, and provide a scratch resistance of at least about 2.5 Newtons as measured by the Teledyne Taber Scratch Tester. However, Takahashi et al teach a decorative material whose surface has excellent scratch resistance that comprises a substrate and an abrasion resistant coating layer formed thereon wherein the coating layer is excellent in both abrasion resistance and flexibility (Abstract; Col. 1, lines 5-11.) Takahashi et al teach that the abrasion-resistant coating includes a crosslinkable resin and 5% to 50% by weight spherical particles having an average diameter of 3 to 50 micrometers, noting that when the content of the spherical particles is less than 5% by weight by weight, the scratch resistance is insufficient and when the content is more than 50% by weight, the binder effects of the crosslinkable resins cannot be fully obtained, and the coating layer has lowered flexibility (Abstract; Col. 3, lines 34-39.) Takahashi et al

teach that the spherical particles have a hardness greater than the resin and may be selected from fused alumina, alumina produced by the Bayer process, zirconia, titania, organic resin particles, and preferably alpha-alumina, because alpha-alumina has an extremely high hardness and can impart high abrasion resistance to the resulting coating layer and can be readily obtainable in a spherical shape (Abstract; Col. 3, lines 5-13; Col. 4, lines 32-41.) Takahashi et al specifically teach that the spherical shape of the particles provides greatly improved abrasion resistance as compared with particles in an indeterminate form made of the same material, and, at the same time, produces the following characteristic effects: the spherical particles do not wear a coating applicator used, the hardened coating layer also does not wear those things which are brought into contact with the coating layer, and the coating layer has improved transparency (Col. 4, lines 5-15.) Takahashi et al also teach that it is preferable that the hardness of the spherical particles be greater by at least 1 or more in terms of the Mohs hardness scale than the crosslinkable resin and that the spherical particles can be inorganic or organic resin (Col. 4, lines 16-28.) The abrasion resistant coating can be applied to a number of substrates including paper, woodboards, particle board, medium density fiber board, FRP boards which are obtained by impregnating various fibrous substrates such as paper with a resin such as phenolic or melamine, or a composite substrate obtained by laminating two or more substrates (Col. 2, lines 1-67.) Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize spherical particles for the polyethylene glycol distearate as well as the abrasion resistant particles for improved scratch/abrasion resistance and reduced machine wear as taught by Takahashi et al, for the decorative laminate taught by Albrinck et al, utilizing

routine experimentation to determine the optimum weight percent of the particles in the impregnating resin to yield the desired abrasion or scratch resistance for a given end use.

12. Claims 1-3, 6-9, 11-12, 16, 20-22, 26-29, 33-35, and 39-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al (USPN 5,456,949) in view of *Microspheres: Microspheres Engineered for a Wide Choice of Unique Enhancements* by 3M and Zeelan Industries, Inc. (3M and Zeelan) and in further view of the admitted prior art for the reasons recited in the prior office action and restated below.

13. Albrinck et al teach a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance, as well as excellent appearance and cleanability and methods of producing same (Abstract.) The method of producing the decorative laminate includes impregnating a decorative alpha-cellulose paper with a coating formulation comprising melamine-formaldehyde resin with abrasion resistant particles having a particle size of about 15 microns to about 45 microns suspended in the coating formulation wherein this initial coating step provides about 50 to 80 percent of the total resin requirement of the decorative laminate (Abstract; Col. 5, line 63 - Col. 6, line 5; Col. 6, lines 10-13.) The abrasion resistant material is preferably alumina with the concentration of alumina particles in the resin coating formulation dependent upon the amount of surface area which needs to be covered, however for sufficient damage resistance, the concentration should be about 8-12 grams per square meter of surface area (Col. 5, lines 3-8.) The alumina particles should be precoated with an amino silane coupling agent (Col. 5, lines 8-10.) The resin impregnated decorative sheet is then further coated or **saturated** (*impregnated*) with an overcoat of a "neat" melamine

formaldehyde resin coating formulation which does not contain any abrasion resistant alumina particles or in the alternative contains abrasion resistant particles that are smaller than the particles used in the first coat (Abstract; Col. 6, lines 14-20.) Albrinck et al further teach that the coating formulation further comprises about 0.1 percent polyethylene glycol distearate (*a thermoplastic waxy material*) as the preferred lubricating agent to enhance surface slip and improve scrape resistance of the laminate and the overcoat composition further comprises about 0.1 to about 0.2 percent polyethylene glycol distearate as a surface lubricant to further reduce the abrasive friction on the surface of the decorative laminate (Col. 5, lines 25-54; Col. 6, lines 25-27.) Albrinck et al also teach that a polyethylene wax in the coating formulation was evaluated as an auxiliary slip agent, however, it was found to impart haze and blur to the resulting decorative laminate (Col. 5, lines 39-43.) Albrinck et al teach that the damage resistant decorative laminate may be produced either with or without an intermediate drying step between the initial coating and the subsequent overcoat (Col. 6, lines 28-32.) The coated decorative paper and at least one backing sheet is dried and then heat and pressure consolidated using conventional laminating techniques into a damage resistant high pressure decorative laminate having excellent scratch, mar, scrape and abrasion resistance as well as a uniform appearance and excellent cleanability (Col. 6, lines 33-38.) Albrinck et al further teach that conventional high pressure decorative laminates are made of two essential layers, a core layer and a surface layer, wherein the core layer normally consists of a plurality of cellulosic sheets generally made from a kraft paper impregnated with a laminating resin (Col. 1, lines 19-25.) Placed above the core layer is the decorative layer which is generally an alpha cellulose paper impregnated with a

melamine-formaldehyde resin (Col. 1, lines 31-35.) The laminates are used as surfacings for counter tops, table tops, furniture, store fixtures and the like (Col. 1, lines 65-66.)

14. Albrinck et al do not specifically teach the temperature and pressure at which consolidation is performed however, as admitted by the Applicant as prior art, it is well known in the art that high pressure laminates are produced at a temperature of 230-340°F and a pressure of 800-1600 psi (Page 3, lines 1-10.) Additionally, it is well known in the art that these laminate films are typically used as surface material for materials comprising wood, for non-limiting example, particle board, medium density fiberboard, composite panel and other wood-based materials (Page 2, lines 8-11.) Albrinck et al also do not specifically teach that the abrasion resistant particles are microspheres, and in particular alkali alumino silicate ceramic microspheres, that provide about 0.5 to 4.75% of the thermosetting resin after drying and provide a scratch resistance of at least about 2.5 Newtons as measured by the Teledyne Taber Scratch Tester. However, 3M and Zeelan teach that microspheres offer a variety of inherent advantages over many traditional irregularly shaped mineral fillers such as improved flow, lower resin demand, low viscosity/high filler loading, and reduced warpage and shrinkage (Page 2, Col. 1.) Further, 3M and Zeelan teach that ZEEOSPHERES™ Ceramic Microspheres are ideal options for **hardness and abrasion resistance**, gloss control, and corrosion resistance, or if you need a fine particle size filler. In particular, 3M and Zeelan teach an alkali alumino silicate ceramic microsphere which is commercially available as ZEEOSHERES W-610 and is a semi-transparent, white colored, fine particle size, high strength, high hardness ceramic microsphere. 3M and Zeelan also teach that ZEEOSPHERES™ Ceramic Microspheres can help reduce VOCs, and help improve hardness, corrosion resistance, and abrasion resistance of high solids industrial

coatings. Therefore, based on the product information from 3M and Zeelan, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize the ceramic microspheres taught by 3M and Zeelan to provide the many advantages and enhancements over other mineral particles, for the abrasion resistant particle in the invention taught by Albrinck et al. Additionally, it would have been obvious to one having ordinary skill in the art to utilize routine experimentation to determine the optimum weight percent of the abrasion resistant particles in the impregnating resin based on the desired abrasion and/or scratch resistance for a given end use.

15. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al in view of Ungar et al (USPN 4,713,138.) The teachings of Albrinck et al are discussed above. Albrinck et al specifically teach that the coating formulation further comprises about 1 to about 4 percent of polyvinyl alcohol as an auxiliary slip agent.and 0.1 percent polyethylene glycol distearate (*a thermoplastic waxy material*) as the preferred lubricating agent to enhance surface slip and improve scrape resistance of the laminate, and the overcoat composition further comprises about 0.1 to about 0.2 percent polyethylene glycol distearate as a surface lubricant to further reduce the abrasive friction on the surface of the decorative laminate (Col. 5, lines 25-54; Col. 6, lines 25-27.) Albrinck et al also teach that a polyethylene wax in the coating formulation was evaluated as the auxiliary slip agent, however, it was found to impart haze and blur to the resulting decorative laminate (Col. 5, lines 39-43.) Though Albrinck et al teach that the coating and overcoat composition may comprise polyethylene glycol distearate (a waxy thermoplastic lubricant), Albrinck et al do not teach that the coating formulation and the

overcoat composition comprise substantially spherical thermoplastic polymer powder having a particle size in the range of about 5 to about 60 microns. However, Ungar et al teach that by dispersing a lubricant such as finely divided wax particles having a particle size of 1-30microns in a thermosetting resin normally used to impregnate décor paper provides a decorative laminate having excellent abrasion resistance and substantially improved sliding can wear resistance and scuff resistance wherein the wax particles may be oxidized waxes, stearate waxes, polyethylene waxes and microcrystalline waxes, and preferably micronized polyethylene waxes or powders ("substantially spherical"), and wherein the paper acts as a filter during impregnation so that most of the lubricant particles remain at or near the surface of the laminate (Abstract; Col. 5, lines 15-61; Col. 6, lines 30-50.) Ungar et al further teaches when the selection of the particulate lubricant is important to obtain satisfactory results and that the lubricant should melt during pressing so that it will migrate to the laminate surface and be locked in without causing haze or deterioration; however, haze can be sometimes tolerated depending on the requirements of the product and further that the content of the solid lubricant is a result-effective variable (Col. 6, lines 15-25 and lines 51-66.) Hence, based on the teachings of Ungar et al, it would have been obvious to one having ordinary skill in the art to provide the polyethylene glycol distearate wax or the polyethylene wax taught by Albrinck et al as a powder or finely divided particles ("substantially spherical particles") having a particle size in the range of 1-30 microns, utilizing routine experimentation to determine the optimum amount of solid lubricant to provide the desired properties for a particular decorative laminate, wherein Ungar et al particularly teach that polyethylene waxes and stearate waxes are functional equivalents in the art.

16. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al in view of Kuehnle (USPN 4,846,887.) The teachings of Albrinck et al are discussed above. Albrinck et al specifically teach that the coating formulation further comprises about 1 to about 4 percent of polyvinyl alcohol as an auxiliary slip agent and 0.1 percent polyethylene glycol distearate (*a thermoplastic waxy material*) as the preferred lubricating agent to enhance surface slip and improve scrape resistance of the laminate, and the overcoat composition further comprises about 0.1 to about 0.2 percent polyethylene glycol distearate as a surface lubricant to further reduce the abrasive friction on the surface of the decorative laminate (Col. 5, lines 25-54; Col. 6, lines 25-27.) Albrinck et al also teach that a polyethylene wax in the coating formulation was evaluated as the auxiliary slip agent, however, it was found to impart haze and blur to the resulting decorative laminate (Col. 5, lines 39-43.) Though Albrinck et al teach that the coating and overcoat composition may comprise polyethylene glycol distearate (*a waxy thermoplastic lubricant)*, Albrinck et al do not teach that the coating formulation and the overcoat composition comprise substantially spherical thermoplastic polymer powder having a particle size in the range of about 5 to about 60 microns. However Kuehnle teaches that substantially spherical microwax powder particles, such as fatty acid derivatives (*broad genus compassing stearate waxes*) and polyolefin waxes, utilized in varnish (*coating)* systems provide improved non-sticking or slip characteristics as well as improved abrasion and scratch resistance over broken particles of the same wax body composition with particle size affecting the dispersiblity of the wax particles in the varnish composition and hence preferably 95% of the particles are smaller than 32μm to provide for good dispersibility and 80-100% are larger than 1μm (Abstract; Col. 1, lines 45-60; Col. 2, lines 5-24, lines 27-33, lines 50-54; Col. 3, lines 15-

30.) Hence, based on the teachings of Kuehnle, it would have been obvious to one having ordinary skill in the art to utilize the polyethylene glycol distearate wax or the polyethylene wax taught by Albrinck et al in the form of spherical particles to provide improved slip characteristics and improved abrasion and scratch resistance as taught by Kuehnle utilize routine experimentation to determine the optimum particle size to provide the desired dispersiblity for a particular coating composition, wherein Kuehnle particularly teaches that polyethylene waxes and fatty acid derivative waxes are functional equivalents in the art.

17. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrinck et al in view of O'Dell et al (USPN 4,567,087.) The teachings of Albrinck et al are discussed above. Albrinck et al specifically teach that the coating formulation further comprises about 1 to about 4 percent of polyvinyl alcohol as an auxiliary slip agent and 0.1 percent polyethylene glycol distearate (*a thermoplastic waxy material*) as the preferred lubricating agent to enhance surface slip and improve scrape resistance of the laminate, and the overcoat composition further comprises about 0.1 to about 0.2 percent polyethylene glycol distearate as a surface lubricant to further reduce the abrasive friction on the surface of the decorative laminate (Col. 5, lines 25-54; Col. 6, lines 25-27.) Albrinck et al also teach that a polyethylene wax in the coating formulation was evaluated as the auxiliary slip agent, however, it was found to impart haze and blur to the resulting decorative laminate (Col. 5, lines 39-43.) Though Albrinck et al teach that the coating and overcoat composition may comprise polyethylene glycol distearate (a waxy thermoplastic lubricant), Albrinck et al do not teach that the coating formulation and the overcoat composition comprise substantially spherical thermoplastic polymer powder having a particle size in the range of about 5 to about 60 microns. However, O'Dell et al teach that by

dispersing a lubricant such as finely divided wax particles having a particle size of 1-25 microns in an abrasion-resistant coating mixture to be applied to an unimpregnated paper such that the wax particles are provided at or very near the surface thereof, provides an abrasion-resistant decorative laminate having improved scuff resistance due to a surface which is more slippery than normal wherein the particle size and concentration of the wax are selected to avoid haze or reducing the clarity of the decorative laminate (Abstract; Col. 4, line 37-Col. 5, lines 14.) O'Dell teach that the wax particles may be oxidized waxes, stearate waxes, polyethylene waxes and microcrystalline waxes, and preferably micronized polyethylene waxes or powders ("substantially spherical"), wherein the selection of the particulate lubricant is important to obtain satisfactory results and that the lubricant should melt during pressing so that it will migrate to the laminate surface and be locked in without causing haze or deterioration; however, haze can be sometimes tolerated depending on the requirements of the product and further that the content of the solid lubricant is a result-effective variable (Col. 5, lines 17-53; Col. 6, lines 1-20; Examples.) Hence, based on the teachings of O'Dell et al, it would have been obvious to one having ordinary skill in the art to provide the polyethylene glycol distearate wax or the polyethylene wax taught by Albrinck et al as a powder or finely divided particles ("substantially spherical particles") having a particle size in the range of 1-25 microns, utilizing routine experimentation to determine the optimum amount of the solid lubricant to provide the desired properties for a particular decorative laminate, wherein O'Dell et al teach that polyethylene waxes and stearate waxes are functional equivalents in the art.

Response to Arguments

18. Applicant's arguments filed 2/4/02 have been fully considered but they are not persuasive. The Applicant first argues that Takahashi et al teaches away from the instant invention and the invention of Albrinck et al given that Takahashi teaches away from impregnation given that Takahashi teaches to "avoid penetration" of the coating composition into the substrate. However, Takahashi et al teach that the coating composition can be 1) directly applied to the substrate or 2) can be transferred to the surface of the substrate and that it is **preferable** to adopt method (2) when a material into which the coating composition penetrates or which has a rough surface is used as the substrate (Col. 9, lines 14-19.) Hence, Takahashi et al do not teach to "avoid penetration" as argued by the Applicant, but only states that method (2) **is preferred** when a material into which the coating composition penetrates. Therefore, the teachings of Takahashi et al, taken in their entirety, include direct coating of the composition on a substrate, including substrates that the coating formulations can penetrate into, such as cloth or paper, and do not teach away from impregnation as in the instantly claimed invention or the invention taught by Albrinck et al as argued by the Applicant. The Applicant further argues that "the Examiner is mistaken in stating that Takahashi shows that spherical particles are better than non-spherical particles" but instead that Takahashi compares its composition to a composition which also has spherical particles in order to explain the necessity of strictly controlling the relationship between the diameter of the particles and the coating's thickness. Col. 1, l. 30-45." However, the Examiner directs the Applicant attention to Col. 4, lines 5-15, as previously cited, which specifically states that "spherical particles can greatly improve the abrasion resistance of the surface resin layer itself, as compared with particles with an indeterminate form made of the

same material, and, at the same time, produce the following characteristic effects: the spherical particles do not wear a coating applicator used; the hardened coating layer also does not wear those things which are brought into contact with the coating layer; and the coating layer has improved transparency. These effects are particularly obtained when the spherical particles have no cutting edge." Hence, Takahashi et al do state that spherical particles have several advantages over particles of an indeterminate form.

19. The Applicant also argues that Albrinck does not teach a second impregnation step but only teaches an overcoating step following its impregnation step. However, the Examiner notes that Albrinck et al teach that the decorative sheet is subjected to an initial coating step which provides about 50 to about 80 percent of the total resin requirement of the decorative laminate and is then further coated or **saturated** with the overcoat composition wherein the Examiner notes that the term "saturated" indicates an impregnation step, and further, even if Albrinck et al did not specify that the sheet was further "saturated", the Examiner takes the position that further coating of the sheet with an overcoat composition would inherently result in impregnation of the overcoat composition into the initially coated decorative sheet that is only initially provided with about 50 to about 80 percent of the total resin requirement of the decorative laminate.

20. With regards to Applicant's alleged showing of unexpected results, it is noted that the results presented by the Applicant are not unexpected given that the prior art discussed above clearly teaches that particles having a spherical shape provide improved scratch and/or abrasion resistance over particles in an indeterminate or non-spherical shape. With regards to Albrinck in view of 3M and Zeelan, the Applicant argues that though 3M and Zeelan teach that the microspheres can be used to improve abrasion resistance, 3M and Zeelan do not specifically

teach the use of the microspheres to improve scratch resistance and given that scratch resistance is different from abrasion resistance it would not have been obvious for one skilled in the art to utilize the teachings of 3M and Zeelan to provide improved scratch resistance. However, the Examiner notes that the terms abrasion resistance and scratch resistance are closely related and often used interchangeably in the art, refer to Takahashi et al, and hence the teachings of 3M and Zeelan with regards to improved hardness and abrasion resistance provides a showing of prima facie obviousness with regards to improved scratch resistance given that the terms abrasion resistance and scratch resistance are so closely related in the art, are both a measure of surface wear, and are often utilized interchangeably in the art. Further, it is noted that the Applicant's data is not a representation of a showing of unexpected results with regards to the closest prior art references and with regards to the broader claim limitations given that the results only provide data for alkali alumino silicate ceramic microspheres as the low profile additive. The Applicant argues that the data clearly shows that spherical particles provide an average scratch resistance of 3.6 Newtons (Table 1) compared to an average of 2.5 Newtons for non-spherical particles (Table A) however it is noted that the data presented in these two tables are inconclusive in providing a showing of unexpected results with regards to "substantially spherical particles" given that there is no direct comparison between spherical particles and non-spherical of the same material at the same percent additive, paper basis weight and film weight of the decorative laminate. It is also noted that the scratch resistance values for the spherical particles range from 2.5 to 4.5 while the range of the non-spherical particles is 2.5 to 3.0 and hence the two overlap. It is particularly noted that at a basis weight of 85 and 3.2% non-spherical particles (Sample ID 3) the laminate has a comparable scratch resistance to a laminate

having a basis weight of 85 and 3.03% spherical particles (Table C, Sample 3.) Hence, the Examiner takes the position that the data presented is inconclusive with regards to a showing of unexpected results and maintains her position with regards to the obviousness rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 703-308-0428. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

mrj
May 17, 2002

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700